

## **Use of Salmonid Valuation in Resource Management: A Valuation Model for Use in Resource Protection and Enhancement Decisions**

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### **Abstract**

The public is constantly facing decisions on how to protect our natural resources, particularly fisheries resources, and how best to apply the limited resources available for these efforts. A generic valuation method for salmonid resources, presented in this paper, can be used to help make more informed resource management decisions in the Pacific Northwest. Recent studies on the value of commercial, recreational and existence or non-use fishery values for salmon in the Pacific Northwest were reviewed. Using court-tested valuation methods, a range of values for several species of salmon was estimated and adjusted for inflation to current values. The salmonid valuation method was coupled with a fishery production, harvest, and escapement model using readily available statistics to estimate the value of salmonids for a particular run or project. The model was used to evaluate fishery enhancement projects to identify the most cost-efficient projects. It was also coupled with a basin-wide HSPF analysis of stormwater alternatives to estimate impacts to fishery valuation, allowing alternatives to be considered based on both the public and private cost development and the public cost to fishery resources. The method provides even small governments the ability to make more informed resource management decisions.

## **The Contribution of Reed-Canary Grass Dominated Low Gradient Streams to Juvenile Salmon Overwintering Habitat**

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### **Abstract**

This study assessed overwintering juvenile salmon use in reed canary grass-dominated low-gradient streams lacking the habitat features normally associated with salmon streams. Mill Creek in King County, Washington is a low-gradient tributary to the Green River. During the late summer, few juvenile salmonids use the low-gradient reaches due to elevated temperatures and low DO. During the late fall and early winter, juvenile salmon migrate from the Green River into Mill Creek to overwinter. Overwintering juvenile salmon use in Mill Creek was determined by electroshocking reaches of Mill Creek. Juvenile salmon sizes and densities were compared to those in streams of presumed higher value based on habitat measurements. The densities and sizes of overwintering juvenile coho in Mill Creek were comparable to, and at times exceeded, those found in streams rated as having superior habitat based upon standard methodologies. Given the right combination of factors, streams that appear to have poor salmonid habitat value, often provide a range of critical habitat functions for overwintering juvenile salmonids and contribute significantly to the available habitat. The removal of reed canary grass without consideration of its contribution to overwintering salmon may have adverse impacts upon pre-smolt production in a stream.

## **The Schel-chelb Estuary—A Successful Habitat Mitigation/Enhancement Partnership**

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### **Abstract**

Constructed in 1997, the Schel-chelb Estuary is a new two-acre intertidal mudflat/saltmarsh located on Bainbridge Island. The project provides compensatory habitat mitigation for a related cleanup project, and other environmental objectives. The overall project represents a highly successful public-private partnership of more than 12 entities, all of whom benefited.

The Schel-chelb Estuary was initially conceived by USFWS and local sponsors as a habitat enhancement project, restoring a historic estuary on the site. Concurrently, WSDOT and other parties identified the Schel-chelb project as partial compensation for 0.9 acres of nearshore confined disposal facility (CDF) fill in nearby Eagle Harbor. Use of the CDF facilitated cost-effective sediment cleanup of the West Eagle Harbor Site, and also resolved a conflict between the need to expand the ferry maintenance facility and to maintain other community uses. Approval of the estuary as partial mitigation for the Eagle Harbor CDF fill site provided the necessary funding for project design and construction, which otherwise would not have been possible.

The combined Schel-chelb Estuary and Eagle Harbor cleanup projects increased the amount of high-quality aquatic habitat on Bainbridge Island, relative to existing conditions and other multi-project alternatives. The project may provide a good model for other public-private partnerships.

## **Coho Salmon Restoration in the Chimacum Watershed**

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### **Abstract**

The objective of this 1996 study was to assess the potential for restoration of coho salmon (*Oncorhynchus kitsutch*) in a watershed dominated by agricultural land uses. Limitations on coho recovery were evaluated by comparing the existing conditions of the coho population and habitat to pre-European settlement conditions and identifying areas of habitat loss for each stage in the coho's freshwater life cycle. Existing conditions were assessed by field sampling of juvenile coho distribution and habitat parameters. Historical conditions were reconstructed based on oral histories, General Land Office surveys that were conducted between 1858–1874, and assorted maps, aerial photographs, and reports. We found that coho salmon habitat in the Chimacum watershed has decreased dramatically both in quantity and quality over the past 145 years. Removal of swamps, beaver ponds, and channel meanders by extensive ditching has eliminated over 90% of the historic summer and winter rearing habitat for juvenile coho in the watershed. Of this remaining fraction of habitat, most has been degraded by a combination of land-use impacts that have caused high temperatures, keyed to specific sites, include protecting existing refugia, correcting man-made fish passage barriers, and restoring rearing habitats and riparian zones. Several major restoration projects that have been completed based on the assessment are discussed.

# **The Salmon and Steelhead Habitat Inventory and Assessment Project: Stock Restoration from the Ground Up**

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## **Abstract**

The Salmon and Steelhead Habitat Inventory and Assessment Project (SSHIAP) goals are: to quantify current freshwater salmon habitat, to assess the effect of habitat degradation and loss on SASSI salmon stocks, and to develop stock- or watershed-based restoration projects. The project area includes all coastal and Puget Sound watersheds from the Canadian border south to the Chehalis River. An important product of SSHIAP will be a database linked to a geographic information system (GIS). This system delineates each stream network into 0.1–3.0-mile segments at the 1:24000 scale and contains information on fish distribution, migration barriers, channel modifications, and other habitat features. Preliminary analyses suggest that a broad-scale approach to quantifying human impacts on salmon habitat provides a necessary foundation for individual stock recovery and a framework for future research and restoration of salmon and steelhead in western Washington.